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Transmission dynamics of *vivax* malaria in Korea: effectiveness of anti-malarial chemoprophylaxis

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Background

Vivax malaria with two distinct (short- and long-term) incubation periods has been prevalent in the Republic of Korea since its re-emergence in 1993. Chemoprophylaxis has been conducted among military personnel since 1997. We estimated the time-dependent reproduction number, thereby assessing the protective effect of chemoprophylaxis.

Materials and methods

A mathematical model has been formulated using a renewal equation, estimating the yearly reproduction number (Ry) from 1993 to 2012 by maximum likelihood estimation method. We also computed Akaike Information Criterion (AIC) to test if there was a detectable change point in the trend in relation to chemoprophylaxis.

Results

Three-year average of Ry showed gradual decline through 1993-2012 with a temporary increase from 2003 to 2005, having been under the threshold 1 since 1998. AIC has suggested that the chemoprophylaxis has cut down Ry by 34% from what it would be without chemoprophylaxis.

Conclusions

The epidemic of *vivax* malaria in Korea has been brought under control due mainly to mass-chemoprophylaxis.

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